REAL-TIME PROVISION OF WATER QUALITY INFORMATION TO SUPPORT FARMERS OPTIMISING THEIR CROP MANAGEMENT

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ECOSYSTEMS OF THE Great Barrier Reef (GBR) are under pressure from sediments, chemicals and nitrogen exported from agricultural lands, and there are many programs aiming to have farmers optimise their crop management to reduce these exports.

An important process in helping farmers change their management is facilitating their access to information on losses of sediments, chemicals and/or nitrogen from their farms, and there are a number of initiatives doing this.

The Queensland Government's GBR Catchment Loads Monitoring Program tracks long-term trends in water quality at 43 sites in 20 key catchments and publishes results annually. While this is a critical effort in tracking changes in quality of water discharging to the GBR, the small number of monitoring sites (relative to the number of farms) and the time scale and method of reporting limit the effectiveness of this program in promoting on-farm management change. There are, and have been a number of more locally-based water quality monitoring projects gathering information closer to the farms and delivering those data more frequently (e.g. several time a year) and in a form 'customised' towards farmers' needs.

That customisation generally takes the form of interpreted data (i.e. data turned into information) being presented to farmers by a water quality expert. While this is a valuable step towards giving farmers the information they want on water quality, there are still time lags between the collection of data and the provision of the information to farmers.

Given that water quality parameters are commonly measured at high frequency (e.g. several time an hour) by sensors and data stored in data-loggers, it is well within the capability of technology to deliver this information to farmers in real-time. To fulfil the vision of providing farmers with real-time information on water quality near, or on their farms we have developed a system to automate water quality sensor data retrieval and present it to them (and potentially other stakeholders) in real-time on any device (i.e. computer, tablet or phone).

The system has been developed within CSIRO's Digiscape Future Science Platform and is based on CSIRO's Senaps informatics platform. It is currently being deployed and further developed in water quality monitoring activities in the Russell-Mulgrave catchment. That development is currently focusing on designing the 'front end' to present data on dissolved inorganic nitrogen and related parameters to farmers in a format that makes it easy to understand.

Future developments will include adding a predictive capability for water quality within the platform, and incorporating remote sensing data on crop performance, so farmers can assess both the water quality and production impacts of their management simultaneously.